

## **Sanitary Sewer Overflows**

### **Frequently Asked Questions**

The following is a list of Frequently Asked Questions for Sanitary Sewer Overflows organized from general questions about the NPDES Program to more technical questions about Sewer System Overflows.

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#### **What are Sewer System Overflows?**

Sewer System Overflows (SSOs) are discharges of raw sewage from municipal sanitary sewer systems or from privately owned sewer collection systems. SSOs can release untreated sewage into basements or out of manholes and onto city streets, playgrounds and into streams before it can reach a treatment facility. SSOs are often caused by blockages in sewer lines and breaks in the sewer lines.

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#### **Why do sewers overflow?**

SSOs occasionally occur in almost every sewer system, even though systems are intended to collect and contain all the sewage that flows into them. When SSOs happen frequently, it means something is wrong with the system. Problems that can cause chronic SSOs include:

- Infiltration and Inflow (I&I): too much rainfall or snowmelt infiltrating through the ground into leaky sanitary sewers not designed to hold rainfall or to drain property, and excess water inflowing through roof drains connected to sewers, broken pipes, badly connected sewer service lines
  - Undersized Systems: Sewers and pumps are too small to carry sewage from newly-developed subdivisions or commercial areas
  - Pipe Failures: blocked, broken or cracked pipes; tree roots grow into the sewer; sections of pipe settle or shift so that pipe joints no longer match; and sediment and other material builds up causing pipes to break or collapse
  - Equipment Failures: pump failures, power failures
  - Sewer Service Connections: discharges occur at sewer service connections to houses and other buildings; some cities estimate that as much as 60% of overflows come from the service lines
  - Deteriorating Sewer System: improper installation, improper maintenance; widespread problems can be expensive to fix develop over time, some municipalities have found severe problems necessitating billion-dollar correction programs, often communities have to curtail new development until problems are corrected or system capacity is increased.
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#### **Why are SSOs a problem?**

SCDHEC has found that SSOs caused by poor sewer collection system management pose a substantial health and environmental challenge. The response to this challenge varies considerably from system to system. Many municipalities have been proactive in their approach to overflows, but there are many that do not have the resources or capacity to adequately respond

to overflow events. Ultimately, sewer overflows impact public health and the environment and it is the utility's responsibility to have the appropriate programs in place to manage their collection system.

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### **How big is the SSO problem?**

The total number of SSOs that occur statewide each year is not known. In some areas, they might not be reported or are underreported. Since 1998, SCDHEC has asked utilities to report SSO events that reach waters of the state, or any overflow that is greater than 500 gallons, or an overflow that may cause a health or environmental impact. Even with this reporting requirement, it is uncertain the number of SSOs that may go unreported or do not meet the reporting criteria.

In a 1994 survey of 79 members of the Association of Metropolitan Sewerage Agencies, 65 percent of the respondents reported wet weather SSOs. They reported that between 15 and 35 percent of their sewers were filled above capacity and/or overflowed during wet weather. However, municipal respondents with SSOs had only limited information about them. Only 60 percent had estimated the annual number. Half of those had estimated the amount of sewerage discharged, and 17 percent had determined what pollutants were in their overflows.

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### **What health risks do SSOs present?**

Because SSOs contain raw sewage they can carry bacteria, viruses, protozoa (parasitic organisms), helminths (intestinal worms), and borroughs (inhaled molds and fungi). The diseases they may cause range in severity from mild gastroenteritis (causing stomach cramps and diarrhea) to life-threatening ailments such as cholera, dysentery, infections hepatitis, and severe gastroenteritis. People can be exposed through:

- Sewage in drinking water sources.
  - Direct contact in areas of high public access such as basements, lawns or streets, or waters used for recreation. At least one study has estimated a direct relationship between gastrointestinal illness contracted while swimming and bacteria levels in the water.
  - Shellfish harvested from areas contaminated by raw sewage.
  - Some cases of disease contracted through inhalation and skin absorption have also been documented.
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### **What other damage can SSOs do?**

SSOs also damage property and the environment. When basements flood, the damaged area must be thoroughly cleaned and disinfected to reduce the risk of disease. Cleanup can be expensive for homeowners and municipalities. Rugs, curtains, flooring, wallboard panels, and upholstered furniture usually must be replaced.

A key concern with SSOs that enter oceans, bays, estuaries, rivers, lakes, streams, or brackish waters is their effect on water quality. When bodies of water cannot be used for drinking water,

fishing, or recreation, society experiences an economic loss. Tourism and waterfront home values may fall. Fishing and shellfish harvesting may be restricted or halted.

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### **How can SSOs be reduced or eliminated?**

Many avoidable SSOs are caused by inadequate or negligent operation or maintenance, inadequate system capacity, and improper system design and construction. These SSOs can be reduced or eliminated by:

- Sewer system cleaning and maintenance
  - Reducing infiltration and inflow through system rehabilitation and repairing broken or leaking service lines.
  - Enlarging or upgrading sewer, pump station, or sewage treatment plant capacity and/or reliability.
  - Construction wet weather storage and treatment facilities to treat excess flows.
  - Communities also should address SSOs during sewer system master planning and facilities planning, or while extending the sewer system into previously unsewered areas.
  - A few SSOs may be unavoidable. Unavoidable SSOs include those occurring from unpreventable vandalism, some types of blockages, extreme rainstorms, and acts of nature such as earthquakes or floods.
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